

REMARKS

Claims 1-26, 28 and 29 are pending in this application. By this Response, claims 1 and 10 are amended. Reconsideration and allowance based on the above amendments and following remarks are respectfully requested.

The Office Action rejects claims 1-3, 5, 8-12, 14, 17-19, 21, 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Merli et al. (USP 6,088,141) in view of Fee et al. (USP 5,914,794) and Lindskog et al. (USP 6,665,262); claims 4, 6, 13, 15, 20, 22 and 28 under 35 U.S.C. § 103(a) as being unpatentable over Merli, Fee, Lindskog and Tada et al. (USP 5,532,862); and claims 7, 16, 23 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Merli, Fee, Lindskog and Cohen et al. (USP 4,736,359). These rejections are respectfully traversed.

Claims 1 and 10

Claim 1 recites, inter alia, an amplifier node coupled between the first and second node, the amplifier node configured to detect a fault on an optical link connecting the amplifier node and the first node and generate a fault report upon detection of the fault, the amplifier node is further configured to directly forward the fault report to the second node, the second node is configured to

detect faults that occur on the optical link connecting the amplifier node to the second node.

Claim 10 recites, inter alia, a method for detecting faults in the optical network having an amplifier node coupled between a first node and second node, comprising detecting a lost signal condition on an optical link carrying optical signals from the first node to the amplifier node; causing the amplifier node to generate a fault report and directly forwarding the fault report to the second node, the second node configured to detect faults that occur on the optical link connecting the amplifier node to the second node.

In claims 1 and 10, the amplifier node is separate from the first and second nodes on the optical network. The amplifier node is located between the first and second optical node on the optical path. When receiving a signal from the first node, the amplifier node detects any faults that have occurred on a link connecting the amplifier node and the first node. The fault data is directly transmitted to the second node. The second node has the ability to detect any fault that occurs on a link connecting the amplifier node to the second node.

In contrast, Merli discloses a system which is designed to operate in conjunction with a network manager. The network management system 116 is connected to each of the nodes within the system. Within each node, two fault monitors are provided to

detect errors that have occurred. The detection of a fault is communicated to a local control unit 255 that communicates information to a network management system. See column 4, lines 34-53 and column 6, lines 12-27. The network management system provides information to the other nodes. Thus, the network management system acts to receive and relay information such as faults, to each node about other nodes in the system.

The Examiner at page 3 of the Office Action, correctly states that "Merli does not distinguish separate amplifier nodes for detecting a fault but rather incorporates the amplification into each node that detects the fault."

The Examiner alleges that "It would have been obvious to one of ordinary skill in the art at the time of the invention that placing the amplification and detection in separate nodes is no different than combining the amplification with the local nodes." Applicants respectfully disagree.

In the art of optical networks amplification of the signal sent over the optical fiber between nodes is necessary under certain conditions, i.e. conditions that would cause degradation of the signal on the optical path. Although processing nodes, such as switching nodes or local nodes, may contain their own amplifier, separate amplification nodes located separately on the optical network are necessary in some networks to amplify signals on the network so the signals are strong enough to reach the processing

node and be processed. Amplifier nodes are known in the art and they are also known to be separately distinct from amplification devices contained within the local nodes or processing nodes. Thus, the Examiner's assertion that one of ordinary skill would view placing the amplification separately on the optical network as being no different than combining the amplification within the local nodes, is incorrect as there is a distinct difference between the two. Thus, Merli fails to teach the use of separate amplification nodes as claimed.

Further, Fee fails to make up for Merli's deficiencies. Fee provides a system by which faults are detected by the amplifier contained within an amplification station on a previous segment of optical fiber. The detected faults are sent to and processed by an element manager contained within the amplification station. The element manager controls the faults detected at each amplifier node in the amplification station. When processed the element manager sends the fault information to the corresponding supervisory channels associated with the amplifier node that detected the fault. The supervisory channel then transfers the fault information to the optical cross connect controllers. See column 5, lines 42-67 to column 6, lines 1-16.

The detected fault in Fee's system is not sent directly to the second node, but is sent along a supervisory channel for receipt by the optical cross connect controllers. Each optical amplifier

detects a fault between it's segment of optical fibers and transmits this information to the optical cross connect and not directly to the next node as claimed in the present invention. Clearly, each amplifier node within the amplification station is managed by the element manager.

Further, both Merli and Fee fail to teach the second node detecting faults occurring on the link between the amplifier node and the second node, as claimed. Neither of the references teach detection of a fault between an amplifier node and a node receiving data from the amplifier node.

The Office Action provides Linskog to teach the recitation of "directly" forwarding all information to the second node. Linskog teaches a system that manages faults that occur in the network. Linskog uses fault agents located in various nodes for detecting faults. A detected fault is analyzed and sent to an associated configuration agent for that particular fault. Linskog teaches forwarding a fault report from a fault agent to a configuration agent. Linskog does not teach or suggest forwarding a fault report from an amplifier node directly to a second node.

At best, the combination of the teachings of Merli, Fee and Linskog teach multiple nodes having an amplifier and fault agent located therein for processing received fault information and forwarding the fault information to configuration agents associated with the fault located somewhere on the network.

Thus, in view of the above, the combination of Merli, Fee and Lindskog fail to teach or suggest each of the claimed features as required. Therefore, a *prima facie* case of obviousness has not been established. Accordingly, reconsideration and withdrawal of the rejections to independent claims 1 and 10 and their corresponding dependent claims are respectfully requested.

Claim 17

Claim 17 recites, inter alia, at least one amplifier node coupled between selected pairs of switching nodes and at least one amplifier node as configured to detect a fault on an incoming optical link carrying optical signals into the amplifier node, generate a fault report upon detection of the fault, and directly forward the fault report to a neighboring node.

As recited in claim 17, the amplifier is positioned between two switching nodes. The amplifier detects a fault on the incoming optical link to the amplifier node. The fault report is generated and directly forwarded to the neighboring node that the amplifier node is located between.

As argued above, the combination of Merli, Fee and Lindskog fail to teach or suggest a separate amplifier node located between two nodes such as switching nodes as recited in claim 17. Further, the combination fails to teach or suggest the generation of a fault report at the amplifier node and the forwarding of the fault report

to the neighboring node. Therefore, the combination of references fail to teach or suggest each feature of claim 17 as required. Thus, a *prima facie* case of obviousness has not been established regarding claim 17 and its dependent claims. Accordingly, reconsideration and withdrawal of the rejection regarding claim 17 and its dependent claims are respectfully requested.

Claim 26

Claim 26 recites, inter alia, an amplifier node for use in an optical network, comprising an input signal power detector and control logic configured to evaluate output from the signal power detector to determine if a loss of signal condition thereby indicating a fault on the incoming optical link, and generating a fault report reporting the loss of signal condition wherein the control logic is further configured to directly forward the fault report to a switching node to allow the switching node to initiate the switching action.

As recited in claim 26, an amplifier node is configured to determine a loss of signal condition from the incoming signal to determine a fault on the incoming optical link. The fault report is generated and directly forwarded to a switching node allowing the switching node to initiate switching action based on the fault report.

As argued above, neither Merli, Fee or Lindskog teach or suggest a separate amplifier node on an optical network that detects fault information, generates a fault report and directly forwards the fault report to a switching node. Merli teaches local nodes which contain amplification within those nodes but does not teach a separate amplifier node. Fee teaches a node containing separate amplifiers within the node in which an element manager within that particular node manages the fault information and sends the fault information along the supervisory channel to the appropriate optical cross connect controllers and not to a switching node as claimed.

Thus, the combination of Merli, Fee and Lindskog fail to teach each and every feature of claim 26 as required. Accordingly, reconsideration and withdrawal of the rejection to claim 26 and its corresponding dependent claims are respectfully requested.

Conclusion

For at least these reasons, it is respectfully submitted that claims 1-26, 28 and 29 are distinguishable over the cited art. Favorable consideration and prompt allowance are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully

requested to contact Chad J. Billings (Reg. No. 48,917) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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